Highway Safety Improvement Program

Data Driven Decisions

Delaware
Highway Safety Improvement Program
2015 Annual Report

Prepared by: DE

Disclaimer

Protection of Data from Discovery & Admission into Evidence

23 U.S.C. 148(h)(4) states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section [HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data."

23 U.S.C. 409 states "Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data."

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Executive Summary

The Delaware Department of Transportation (DelDOT) has prepared this Annual Report for state fiscal year 2015 (July 1, 2014 – June 30, 2015) to demonstrate the success of their safety program. Crash statistics reported in this Annual Report are for calendar year 2014 (January 1, 2014 – December 31, 2014). During the 2015 reporting period, DelDOT continued its successful core HSIP programs – Hazard Elimination Program (HEP), Highway Rail-Grade Crossing Program (HRGX), and Strategic Highway Safety Plan (SHSP). Additionally, DelDOT continued pursing systemic-based programs for the installation of longitudinal rumble strips, median barrier, and high-friction pavement surface treatments. DelDOT also began reviewing signing and pavement markings at all horizontal curves for MUTCD-compliance to identify low-cost improvements at these locations.

On an annual basis, HEP sites are selected using the Critical Rate methodology to identify high crash locations for all HSIP components. The Critical Ratio method (also known as the Rate Quality Control Method) uses a statistical test to determine whether the crash rate at a particular location is significantly higher than a predetermined average crash rate for locations of similar characteristics. A total of 15 corridors were studied under HEP and 5 highway-grade crossings were studied under HRGX. Both programs continued to identify both low-cost remedial improvements and long-term safety improvement needs. Pedestrian safety audits were completed along two corridors with identified pedestrian crash trends and short-term and long-term improvements are being pursued at this time. The success of these programs is demonstrated by the number of fatalities and serious injuries (based on 5-year rolling averages) gradually decreasing from 20*10* to 2013. In 2014, the total number of fatalities and serious injuries increased slightly (less than 2 percent); however, remains below 2012 values. In addition, DelDOT continued working on improvements to its recently developed crash analysis reporting system, and continued to identify future program-level needs and changes related to the MAP-21 legislation. In 2015, DelDOT and the other coordinating agencies and stakeholders initiated the development of the 2015 Delaware Strategic Highway Safety Plan, which was last updated in 2010.

Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP MAP-21 Reporting Guidance dated February 13, 2013 and consists of four sections: program structure, progress in implementing HSIP projects, progress in achieving safety performance targets, and assessment of the effectiveness of the improvements.

Program Structure

Program Administration

How are Highway Safety Improvement Program funds allocated in a State?

☒ Central

☐ District

☐ Other

Describe how local roads are addressed as part of Highway Safety Improvement Program.

All roadways throughout the state are eligible for safety funding; however, the calculations used to identify high crash locations for the Hazard Elimination Program (HEP) include state roadways in DelDOT's road inventory where traffic volumes are available. Traffic volume data is required in order to calculate crash rates required for the critical ratio calculations and is not available on subdivision streets and municipal roadways. Based on a review of statewide crash data on all public roadways from 2009 to 2011, only 4 percent of fatal and incapacitating injury crashes occur on subdivision streets and municipal roadways, indicating that crashes reported on these roadways would not likely meet the minimum crash criteria for the various HSIP elements.

Identify which internal partners are involved with Highway Safety Improvement Program planning.

☒Design

☒Planning

☒Maintenance

☒Operations

☐Governors Highway Safety Office

☐Other:

Briefly describe coordination with internal partners.

Strategic Highway Safety Plan (SHSP) - Delaware's SHSP is a statewide-coordinated safety plan that provides a comprehensive framework, identifies specific goals and objectives, and integrates the four E's - engineering, education, enforcement and emergency medical services (EMS). Delaware's SHSP core agencies include DelDOT, Office of Highway Safety (OHS), and Delaware State Police (DSP). Additionally, several other stakeholders (e.g., Federal Highway Administration, National Highway Traffic Safety Administration, Federal Motor Carrier Safety Administration, Delaware Department of Motor Vehicles, Delaware Department of Justice, Delaware Office of Emergency Medical Services, Delaware Transit Commission, WILMAPCO, Dover/Kent County MPO, City of Wilmington, and Delaware T2/LTAP Center) provide input and expertise towards the development of the SHSP. Together, the SHSP core agencies and stakeholders review fatal and serious injury crash data to identify emphasis areas to focus resources with the goal of reducing fatalities and serious injuries. Additionally, working groups consisting of representatives from the relevant core agencies and stakeholders, meet to discuss implementation plans for specific emphasis areas.

Hazard Elimination Program (HEP) - Fifteen spot locations throughout the state are chosen for safety studies as part of the HEP. For each site selected, DelDOT's Traffic Section reviews crash data, performs a field review, and identifies potential safety improvement alternatives. For candidate locations where improvements are in project development, design, or construction, a safety audit is performed to confirm that the proposed improvements will address the identified crash problem. The HEP committee, which includes representatives from DelDOT (Traffic, Planning, Project Development, and the Maintenance Districts), DSP, FHWA, MPOs, and the counties and municipalities, meets to reach a

consensus on the recommended safety improvements. Traffic control device improvements (i.e., signing, striping, lighting, and traffic signal upgrades) are then designed by DelDOT's Traffic Section and implemented by DelDOT's maintenance forces and/or on-call contractors. Projects requiring detailed design, public involvement, or resulting in right-of-way or environmental impacts are forwarded to DelDOT's Project Development section for prioritization and inclusion in the Capital Transportation Program (CTP).

Identify which external partners are involved with Highway Safety Improvement Program planning.

☒Metropolitan Planning Organizations

☒Governors Highway Safety Office

☒Local Government Association

☒Other: Other-Federal Highway Administration

☒Other: Other-National Highway Traffic Safety Administration

☒Other: Other-Office of Highway Safety

☒Other: Other-Delaware State Police

☒Other: Other-Department of Justice

☒Other: Other-Delaware Office of Emergency Medical Services

☒Other: Other-University of Delaware T2 / LTAP Center

☒Other: Other-Federal Motor Carrier Safety Administration

Identify any program administration practices used to implement the HSIP that have changed since the last reporting period.

☐Multi-disciplinary HSIP steering committee

☒Other: Other-No change

Describe any other aspects of Highway Safety Improvement Program Administration on which you would like to elaborate.

During FY 2015 (July 1, 2014 - June 30, 2015), components of Delaware's HSIP included the Strategic Highway Safety Plan (SHSP), the Hazard Elimination Program (HEP), and the Highway-Rail Grade Crossing Safety Program (HRGX). In 2015, Delaware began working towards the development of the 2015 Delaware SHSP. In addition, continued development of severalsystemic-based programs continued, including programs to install longitudinal rumble strips, high-friction pavement surface treatments, freeway median barrier, and MUTCD-compliant signing and pavement markings at horizontal curves.

Program Methodology

Select the programs that are administered under the HSIP.

☒ Median Barrier	☐ Intersection	☐ Safe Corridor
☒ Horizontal Curve	☐ Bicycle Safety	☐ Rural State Highways
☐ Skid Hazard	☒ Crash Data	☐ Red Light Running Prevention
☐ Roadway Departure	☐ Low-Cost Spot Improvements	☐ Sign Replacement And Improvement
☐ Local Safety	☒ Pedestrian Safety	☐ Right Angle Crash
☐ Left Turn Crash	☐ Shoulder Improvement	☒ Segments
☒ Other: Other-Longitudinal Rumble Strips	☒ Other: Other-Dark Criteria	☒ Other: Other-High Friction Surface Treatment

Program: **Median Barrier**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☐ All crashes	☐ Traffic	☒ Median width
☐ Fatal crashes only	☒ Volume	☒ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☒ Other-All roadway departure crashes, head-on crashes, and cross-median crashes	☐ Lane miles	☒ Roadside features
	☒ Other-Roadway Miles	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☒ Relative severity index

☒ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

- ☐ Ranking based on B/C
- ☐ Available funding
- ☐ Incremental B/C
- ☒ Ranking based on net benefit 1
- ☐ Other

Program: **Horizontal Curve**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☐ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☐ Volume	☒ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☐ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☒ Probability of specific crash types

☐ Excess proportions of specific crash types

☒ Other-All horizontal curves to be evaluated.

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

☐ Ranking based on B/C

☒ Available funding 1

☐ Incremental B/C

☐ Ranking based on net benefit

☐ Other

Program: **Crash Data**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☐ Volume	☐ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☐ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

- ☐ Ranking based on B/C
- ☐ Available funding
- ☐ Incremental B/C
- ☐ Ranking based on net benefit
- ☐ Other

Program: **Pedestrian Safety**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☐ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☐ Volume	☐ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☒ Other-All pedestrian crashes	☐ Lane miles	☐ Roadside features
	☐ Other	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☒ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☒ Relative Weight in Scoring

☐ Rank of Priority Consideration

☐ Ranking based on B/C	
☒ Available funding	34
☐ Incremental B/C	
☒ Ranking based on net benefit	33
☒ Cost Effectiveness	33

Program: **Segments**

Date of Program Methodology: **7/27/2015**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☒ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☐ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☐ Other	☐ Lane miles	☐ Roadside features
	☒ Other-Roadway Miles	☒ Other-Roadway Type

What project identification methodology was used for this program?

☐ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☒ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☒ Relative Weight in Scoring

☐ Rank of Priority Consideration

☒ Ranking based on B/C	25
☒ Available funding	25
☐ Incremental B/C	
☒ Ranking based on net benefit	25
☒ Cost Effectiveness	25

Program: **Other-Longitudinal Rumble Strips**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☐ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☒ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☒ Other-all roadway departure crashes	☐ Lane miles	☒ Roadside features
	☒ Other-Roadway Miles	☐ Other

What project identification methodology was used for this program?

☐ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☒ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

☐ Ranking based on B/C

☒ Available funding 2

☐ Incremental B/C

☒ Ranking based on net benefit 1

☐ Other

Program: **Other-Dark Criteria**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☐ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☐ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☒ Functional classification
☒ Other-All roadway departure and intersection crashes on wet pavement or during dark/unlit conditions	☐ Lane miles	☐ Roadside features
	☒ Other-Roadway Miles	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☐ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☒ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

☐ Ranking based on B/C

☒ Available funding 2

☐ Incremental B/C

☒ Ranking based on net benefit 1

☐ Other

Program: **Other-High Friction Surface Treatment**

Date of Program Methodology: **7/1/2014**

What data types were used in the program methodology?

Crashes	*Exposure*	*Roadway*
☐ All crashes	☐ Traffic	☐ Median width
☐ Fatal crashes only	☒ Volume	☐ Horizontal curvature
☐ Fatal and serious injury crashes only	☐ Population	☐ Functional classification
☒ Other-all wet weather roadway departure crashes	☐ Lane miles	☐ Roadside features
	☒ Other-Roadway	☐ Other

What project identification methodology was used for this program?

☒ Crash frequency

☐ Expected crash frequency with EB adjustment

☐ Equivalent property damage only (EPDO Crash frequency)

☐ EPDO crash frequency with EB adjustment

☐ Relative severity index

☒ Crash rate

☐ Critical rate

☐ Level of service of safety (LOSS)

☐ Excess expected crash frequency using SPFs

☐ Excess expected crash frequency with the EB adjustment

☐ Excess expected crash frequency using method of moments

☐ Probability of specific crash types

☐ Excess proportions of specific crash types

☐ Other

Are local roads (non-state owned and operated) included or addressed in this program?

☐ Yes

☒ No

How are highway safety improvement projects advanced for implementation?

☐ Competitive application process

☒ selection committee

☐ Other

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

☐ Relative Weight in Scoring

☒ Rank of Priority Consideration

☐ Ranking based on B/C

☐ Available funding

☐ Incremental B/C

☒ Ranking based on net benefit 1

☐ Other

What proportion of highway safety improvement program funds address systemic improvements?

17

Highway safety improvement program funds are used to address which of the following systemic improvements?

☒ Cable Median Barriers

☐ Traffic Control Device Rehabilitation

☒ Install/Improve Signing

☐ Upgrade Guard Rails

☐ Safety Edge

☐ Add/Upgrade/Modify/Remove Traffic Signal

☒ Rumble Strips

☐ Pavement/Shoulder Widening

☒ Install/Improve Pavement Marking and/or Delineation

☐ Clear Zone Improvements

☒ Install/Improve Lighting

☒ Other Other-Horizontal Curve Pavement Marking and Signing

What process is used to identify potential countermeasures?

☒ Engineering Study

☒ Road Safety Assessment

☐ Other:

Identify any program methodology practices used to implement the HSIP that have changed since the last reporting period.

☐ Highway Safety Manual

☐ Road Safety audits

☒ Systemic Approach

☐ Other:

Describe any other aspects of the Highway Safety Improvement Program methodology on which you would like to elaborate.

Please see attachment for the methodology on the HSIP Site Selection Process

Progress in Implementing Projects

Funds Programmed

Reporting period for Highway Safety Improvement Program funding.

☐ Calendar Year

☒ State Fiscal Year

☐ Federal Fiscal Year

Enter the programmed and obligated funding for each applicable funding category.

Funding Category	Programmed*		Obligated	
HSIP (Section 148)	7774600	35 %	5578030	38 %
HRRRP (SAFETEA-LU)	277800	1 %	1377122	9 %
HRRR Special Rule	0	0 %	0	0 %
Penalty Transfer - Section 154	2265000	10 %	1508075	10 %
Penalty Transfer – Section 164	0	0 %	2322024	16 %
Incentive Grants - Section 163	0	0 %	0	0 %
Incentive Grants (Section 406)	0	0 %	0	0 %
Other Federal-aid Funds (i.e. STP, NHPP)	10325000	47 %	2473085	17 %
State and Local Funds				

Other National Highway Systems	1479600	7 %	1481386	10 %
Other Urbanized Areas Surface Transportation Program	0	0 %	87400	1 %
Totals	22122000	100%	14827122	100%

How much funding is programmed to local (non-state owned and maintained) safety projects?

$0.00

How much funding is obligated to local safety projects?

$0.00

How much funding is programmed to non-infrastructure safety projects?

$2,277,297.00

How much funding is obligated to non-infrastructure safety projects?

$2,277,297.00

How much funding was transferred in to the HSIP from other core program areas during the reporting period?

$0.00

How much funding was transferred out of the HSIP to other core program areas during the reporting period?

$0.00

Discuss impediments to obligating Highway Safety Improvement Program funds and plans to overcome this in the future.

No impediments at this time.

Describe any other aspects of the general Highway Safety Improvement Program implementation progress on which you would like to elaborate.

None at this time.

General Listing of Projects

List each highway safety improvement project obligated during the reporting period.

Project	Improvement Category	Output	HSIP Cost	Total Cost	Funding Category	Functional Classification	AADT	Speed	Roadway Ownership	Relationship to SHSP	
										Emphasis Area	Strategy
See attached spreadshet											

The reported total project costs and HSIP costs shown are the costs for the reporting period (i.e., FY 2015). Please see spreadsheet attached to this section of the report for project listing.

Progress in Achieving Safety Performance Targets

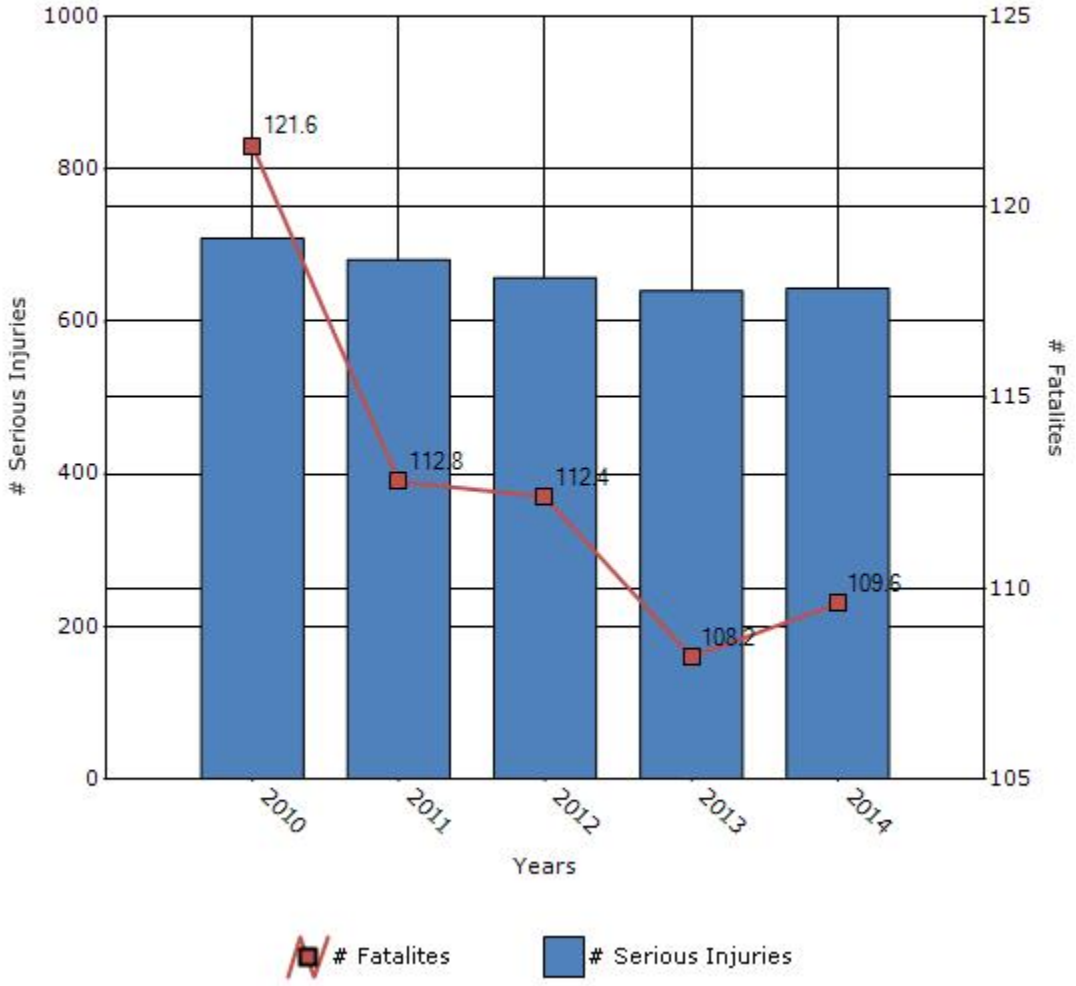
Overview of General Safety Trends

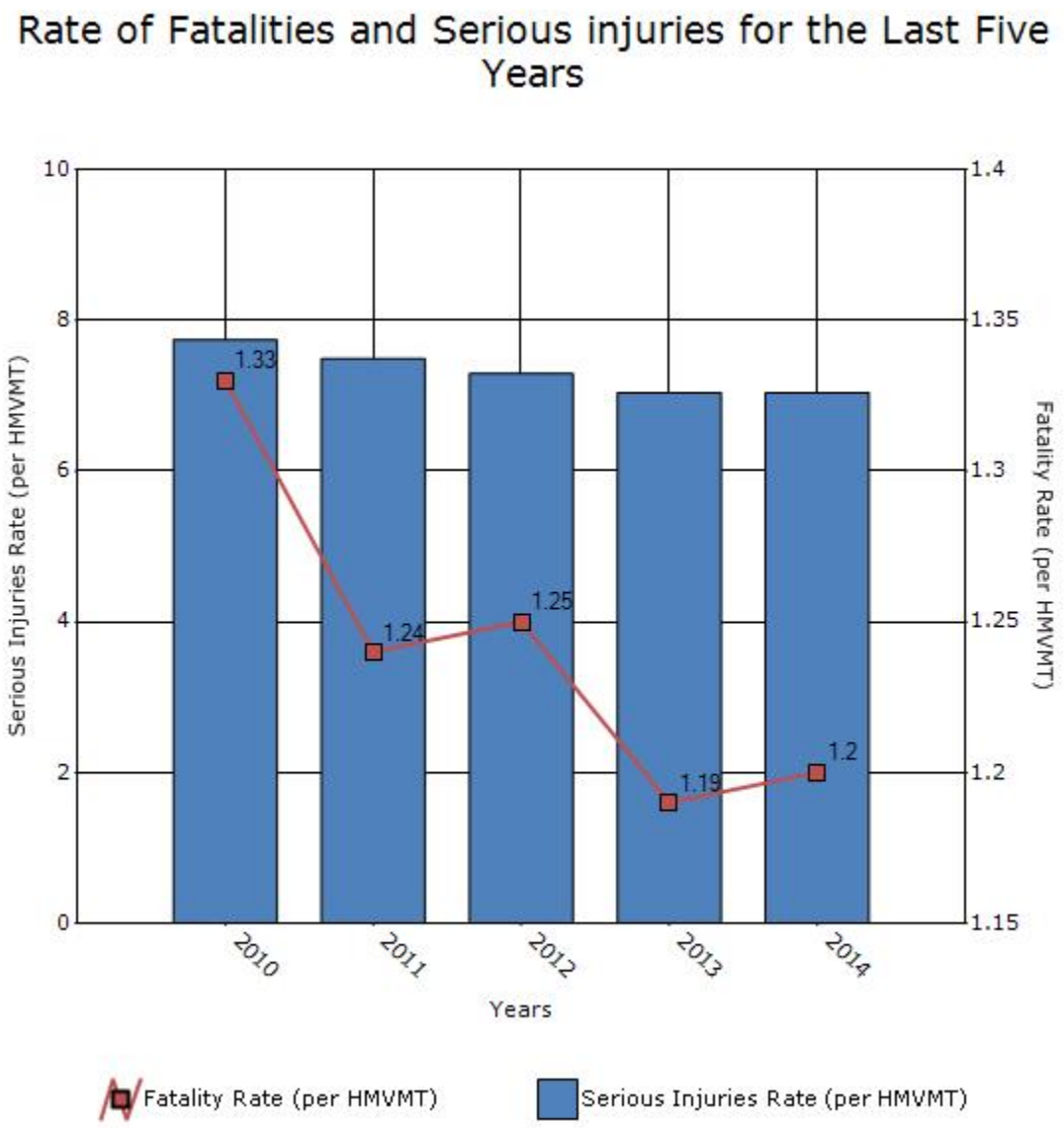
Present data showing the general highway safety trends in the state for the past five years.

Performance Measures*	2010	2011	2012	2013	2014
Number of fatalities	121.6	112.8	112.4	108.2	109.6
Number of serious injuries	708.8	680.8	657	640	643.2
Fatality rate (per HMVMT)	1.33	1.24	1.25	1.19	1.2
Serious injury rate (per HMVMT)	7.74	7.49	7.29	7.04	7.04

*Performance measure data is presented using a five-year rolling average.

Number of Fatalities and Serious injuries for the Last Five Years





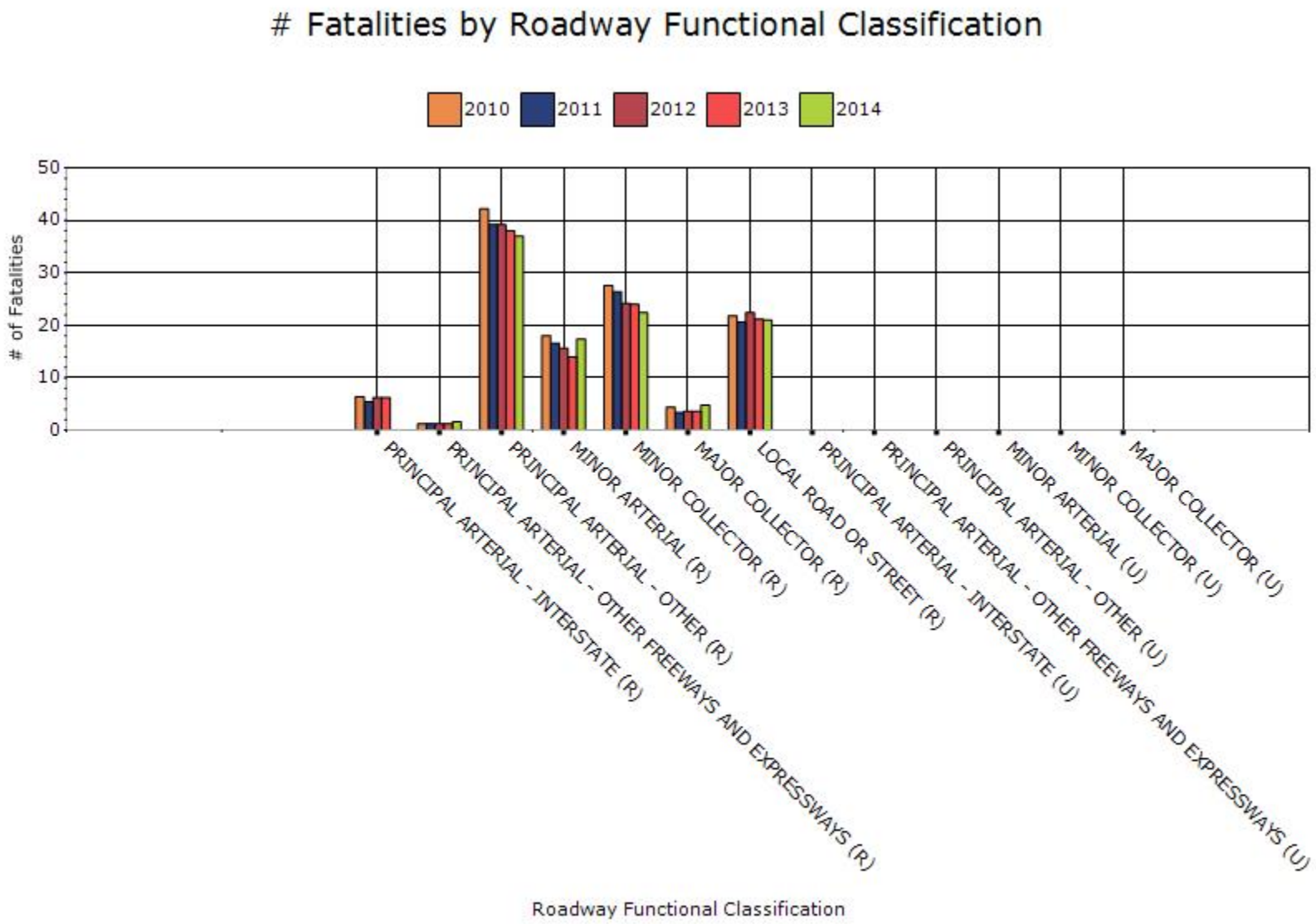
At the time of reporting, annual vehicle miles traveled data is unavailable for calendar year 2014. As such, 2014 crash rates were calculated based on 2013 VMT values. If needed, please see attached spreadsheet for crash data.

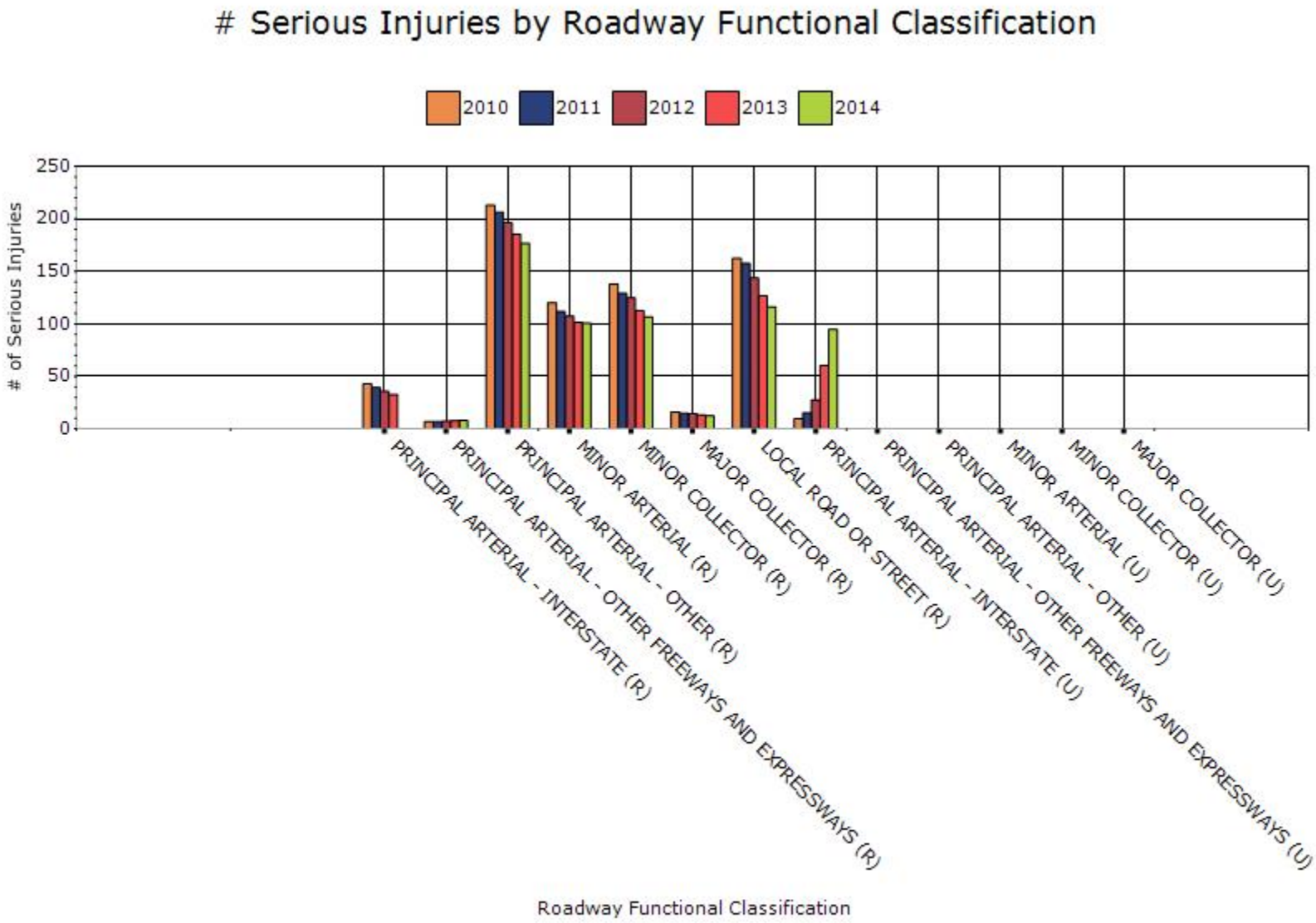
To the maximum extent possible, present performance measure* data by functional classification and ownership.

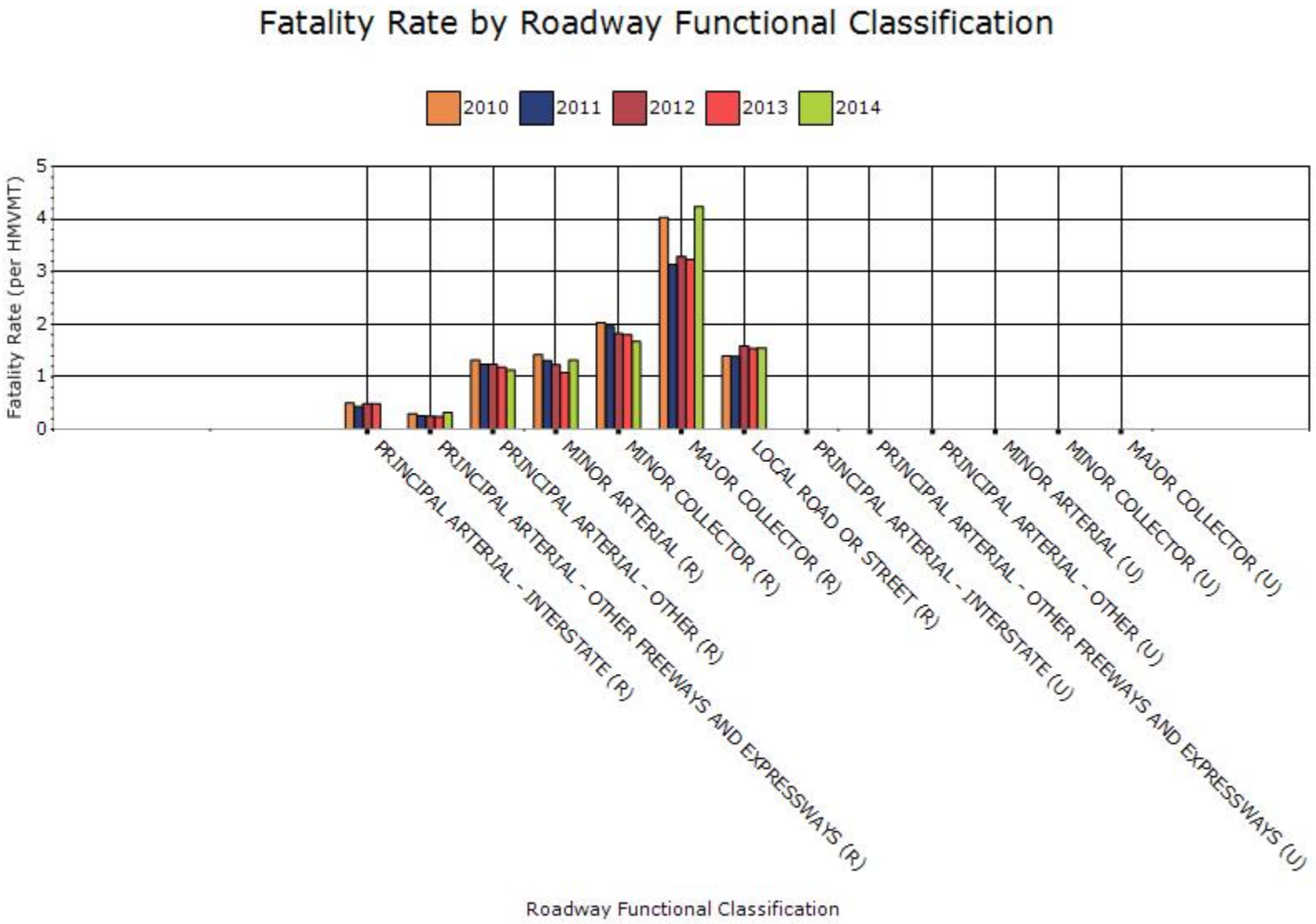
Year - 2014

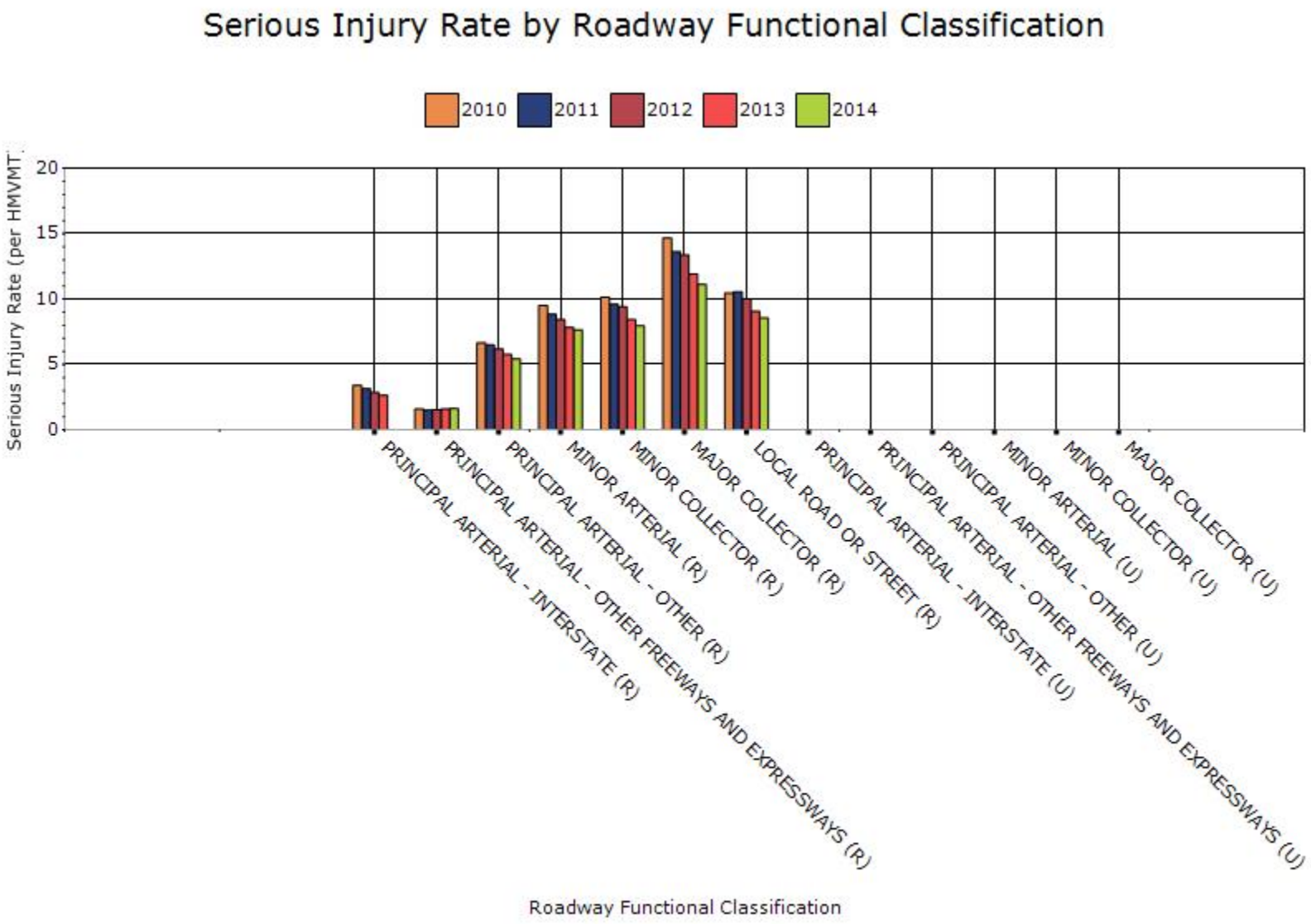
Function Classification	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
PRINCIPAL ARTERIAL - INTERSTATE	0	0	0	0
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS	1.6	8	0.32	1.63
PRINCIPAL ARTERIAL - OTHER	37	176.8	1.13	5.43
MINOR ARTERIAL	17.4	100.8	1.32	7.65
MINOR COLLECTOR	22.4	106.6	1.67	7.95
MAJOR COLLECTOR	4.8	12.4	4.24	11.11
LOCAL ROAD OR STREET	21	116	1.55	8.55
UNKNOWN	0	94.6	0	0
URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND	0	0	0	0

EXPRESSWAYS				
URBAN PRINCIPAL ARTERIAL - OTHER	0	0	0	0
URBAN MINOR ARTERIAL	0	0	0	0
URBAN MINOR COLLECTOR	0	0	0	0
URBAN MAJOR COLLECTOR	0	0	0	0


Fatalities by Roadway Functional Classification
2010
2011
2012
2013
2014
# of Fatalities
50
40
30
20
10
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

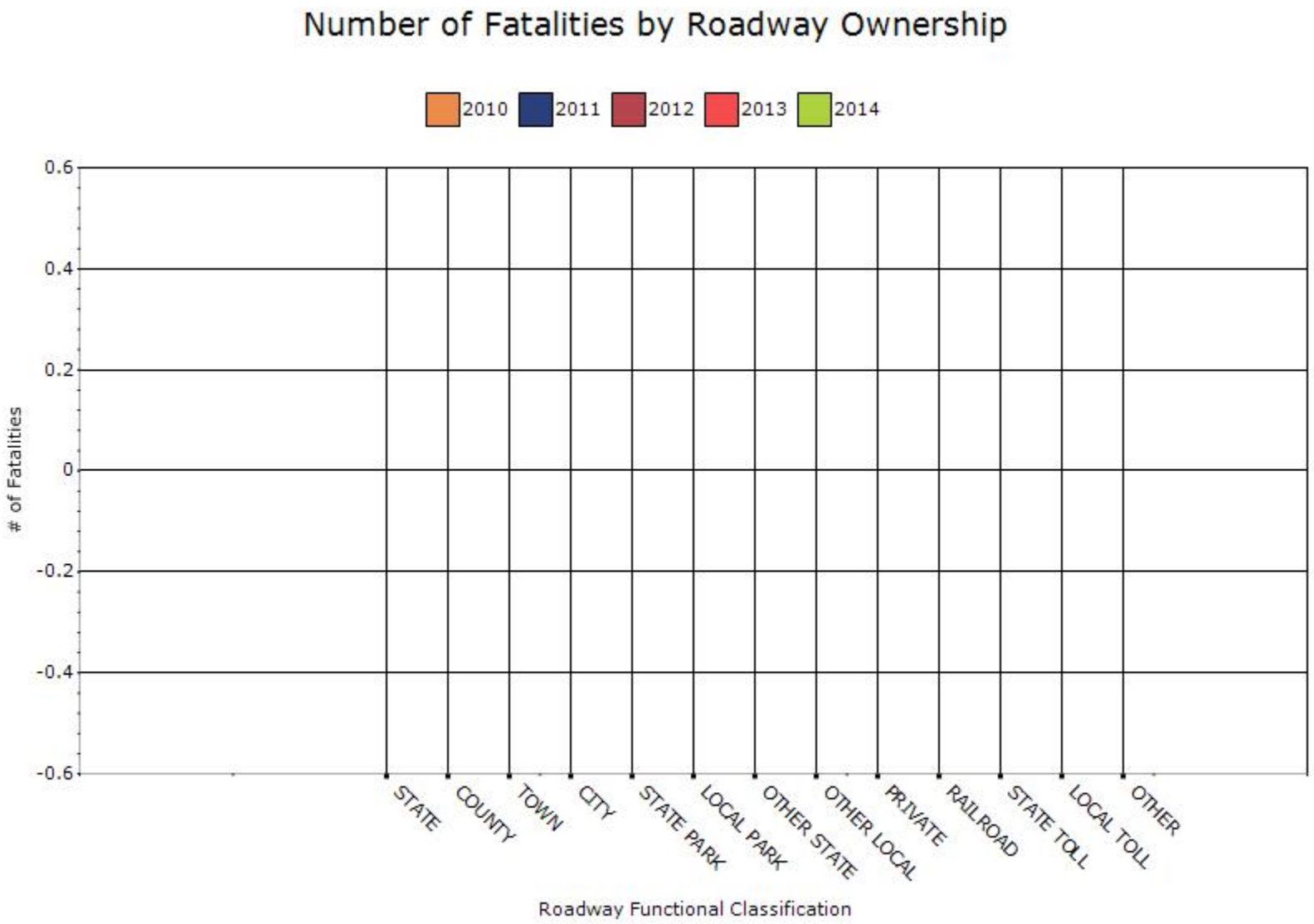

Serious Injuries by Roadway Functional Classification
2010
2011
2012
2013
2014
# of Serious Injuries
250
200
150
100
50
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

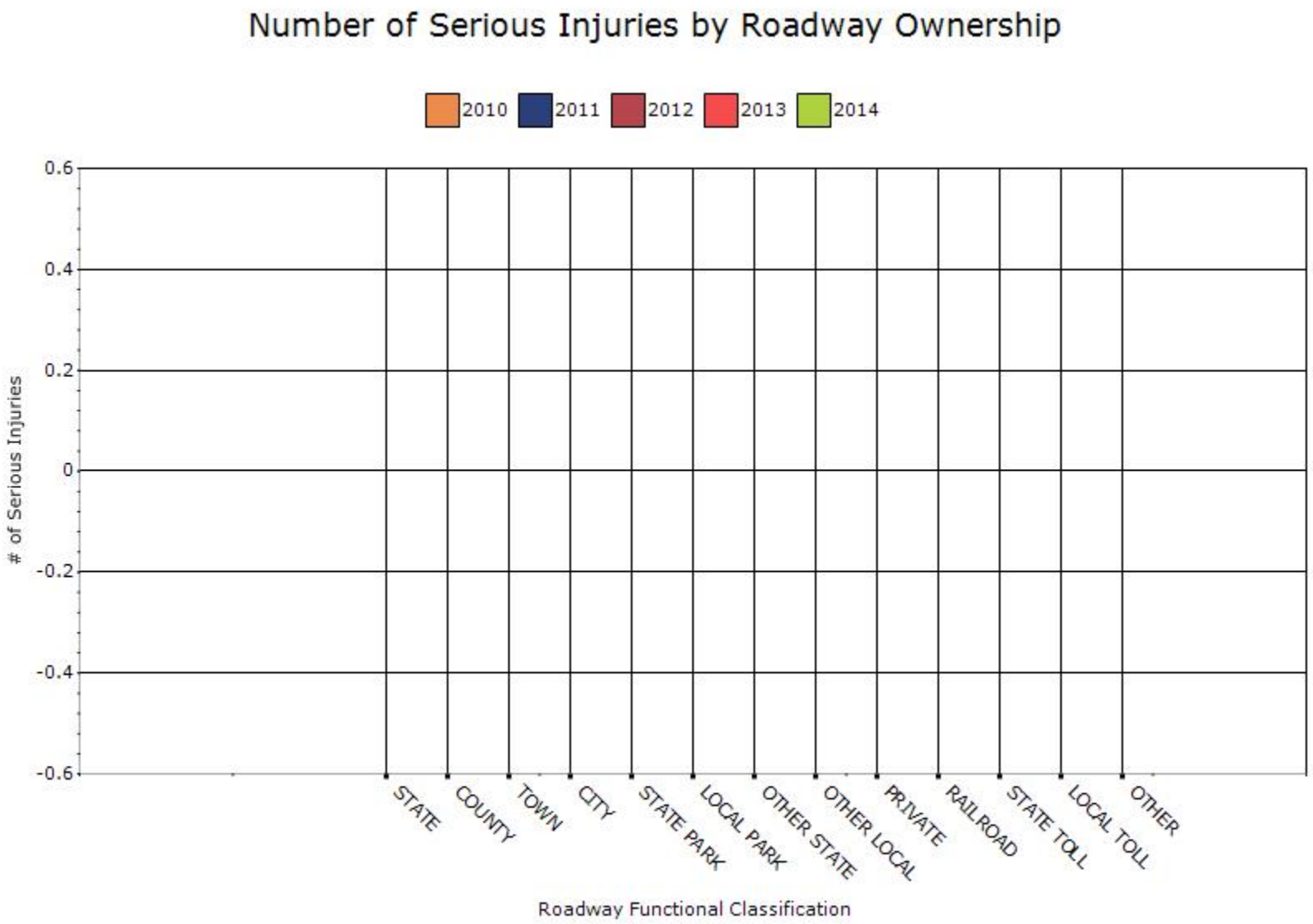

Fatality Rate by Roadway Functional Classification
2010
2011
2012
2013
2014
Fatality Rate (per HMVMT)
0
1
2
3
4
5
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification


Serious Injury Rate by Roadway Functional Classification
2010
2011
2012
2013
2014
Serious Injury Rate (per HMVMT)
20
15
10
5
0
PRINCIPAL ARTERIAL - INTERSTATE (R)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (R)
PRINCIPAL ARTERIAL - OTHER (R)
MINOR ARTERIAL (R)
MINOR COLLECTOR (R)
MAJOR COLLECTOR (R)
LOCAL ROAD OR STREET (R)
PRINCIPAL ARTERIAL - INTERSTATE (U)
PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS (U)
PRINCIPAL ARTERIAL - OTHER (U)
MINOR ARTERIAL (U)
MINOR COLLECTOR (U)
MAJOR COLLECTOR (U)
Roadway Functional Classification

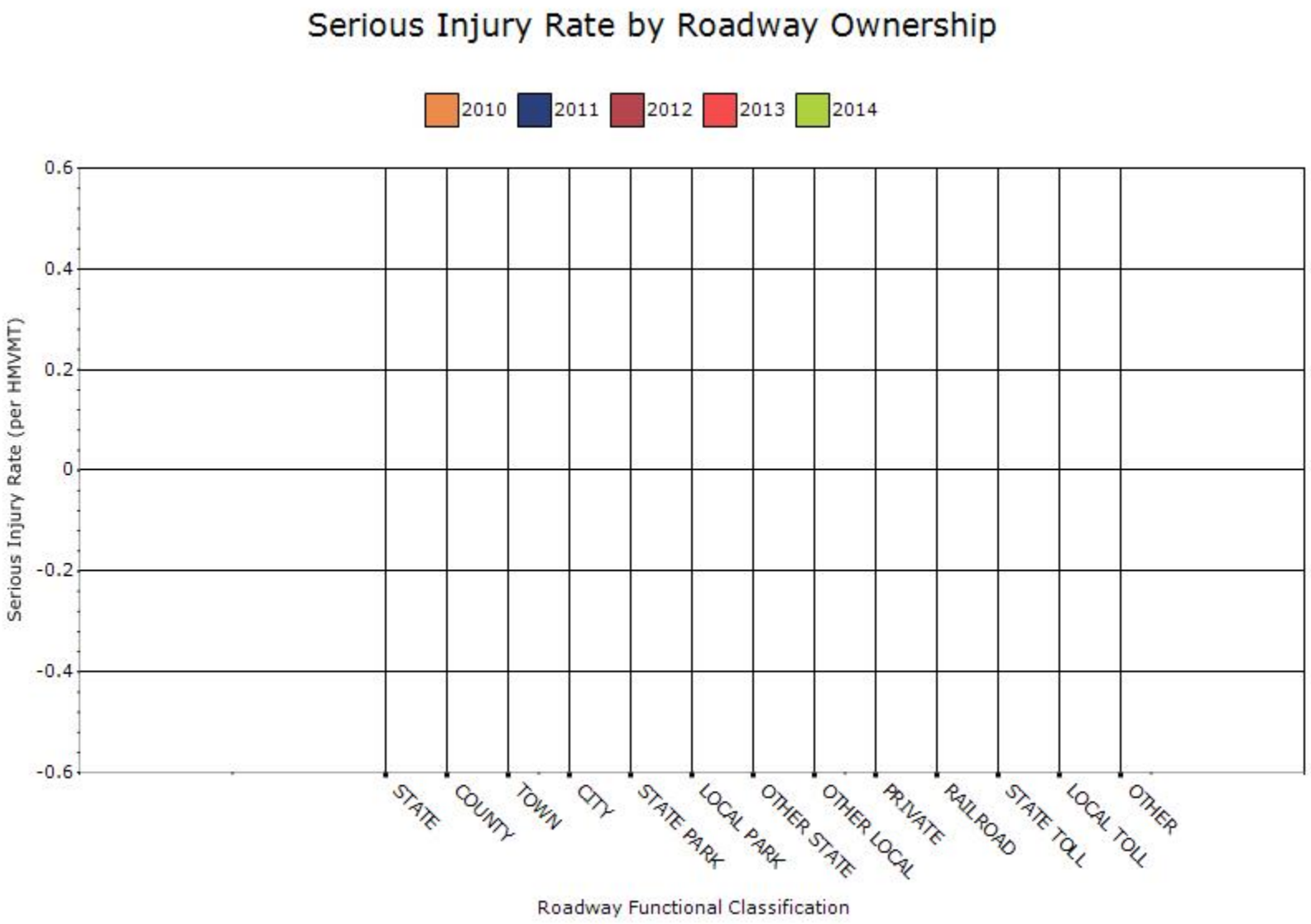
Year - 2010

Roadway Ownership	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)
STATE HIGHWAY AGENCY	0	0	0	0
COUNTY HIGHWAY AGENCY	0	0	0	0
TOWN OR TOWNSHIP HIGHWAY AGENCY	0	0	0	0
CITY OF MUNICIPAL HIGHWAY AGENCY	0	0	0	0
STATE PARK, FOREST, OR RESERVATION AGENCY	0	0	0	0
LOCAL PARK, FOREST OR RESERVATION AGENCY	0	0	0	0
OTHER STATE AGENCY	0	0	0	0
OTHER LOCAL AGENCY	0	0	0	0
PRIVATE (OTHER THAN RAILROAD)	0	0	0	0
RAILROAD	0	0	0	0
STATE TOLL AUTHORITY	0	0	0	0
LOCAL TOLL AUTHORITY	0	0	0	0
OTHER PUBLIC INSTRUMENTALITY (E.G. AIRPORT, SCHOOL, UNIVERSITY)	0	0	0	0


Number of Fatalities by Roadway Ownership
2010
2011
2012
2013
2014
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
# of Fatalities
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


Number of Serious Injuries by Roadway Ownership
2010
2011
2012
2013
2014
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
# of Serious Injuries
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


Fatality Rate by Roadway Ownership
2010
2011
2012
2013
2014
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Fatality Rate (per HMVMT)
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification


Serious Injury Rate by Roadway Ownership
2010
2011
2012
2013
2014
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Serious Injury Rate (per HMVMT)
STATE
COUNTY
TOWN
CITY
STATE PARK
LOCAL PARK
OTHER STATE
OTHER LOCAL
PRIVATE
RAILROAD
STATE TOLL
LOCAL TOLL
OTHER
Roadway Functional Classification

Urban vs. rural crash data by functional classification is not readily available at this time; therefore, functional classifications that combine urban and rural are shown. Additionally, crash data by roadway ownership is not readily available for this reporting period and is not provided. At the time of reporting, annual vehicle miles traveled data is unavailable for calendar year 2014. As such, 2014 crash rates were calculated based on 2013 VMT values. If needed, please see attached spreadsheet for the crash data.

Describe any other aspects of the general highway safety trends on which you would like to elaborate.

As shown, the number of fatalities and serious injuries (based on 5-year rolling averages) per year declined each year from 2010 through 2013. In 2014, the number of fatalities increased from 108 to 110, an increase of approximately 2 percent and the number of serious injuries (based on 5-year rolling averages) increased from 640 to 643, an increase of approximately 0.5 percent. Statewide vehicle miles traveled (VMT; based on 5-year rolling averages) gradually decreased from 2008 to 2012; however, increased slightly in 2013 (2013 VMT increased to slightly more than 2011 VMT). Fatality and serious injuries per VMT followed similar trends as described above. Similar to statewide trends, fatality and serious injury rates by functional classification generally declined or remained relatively the same from 2010 to 2014. The raw number of fatalities and serious injuries per year for the State of Delaware are relatively low; therefore, there is greater potential for larger fluctuations in fatality rates and serious injury rates as compared to other states and national rates, even though the raw number of fatalities and serious injuries may only differ by a few on a year-to-year basis.

Application of Special Rules

Present the rate of traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65.

Older Driver Performance Measures	2009	2010	2011	2012	2013
Fatality rate (per capita)	0.11	0.1	0.09	0.09	0.09
Serious injury rate (per capita)	0.34	0.36	0.35	0.32	0.33
Fatality and serious injury rate (per capita)	0.45	0.46	0.44	0.41	0.42

*Performance measure data is presented using a five-year rolling average.

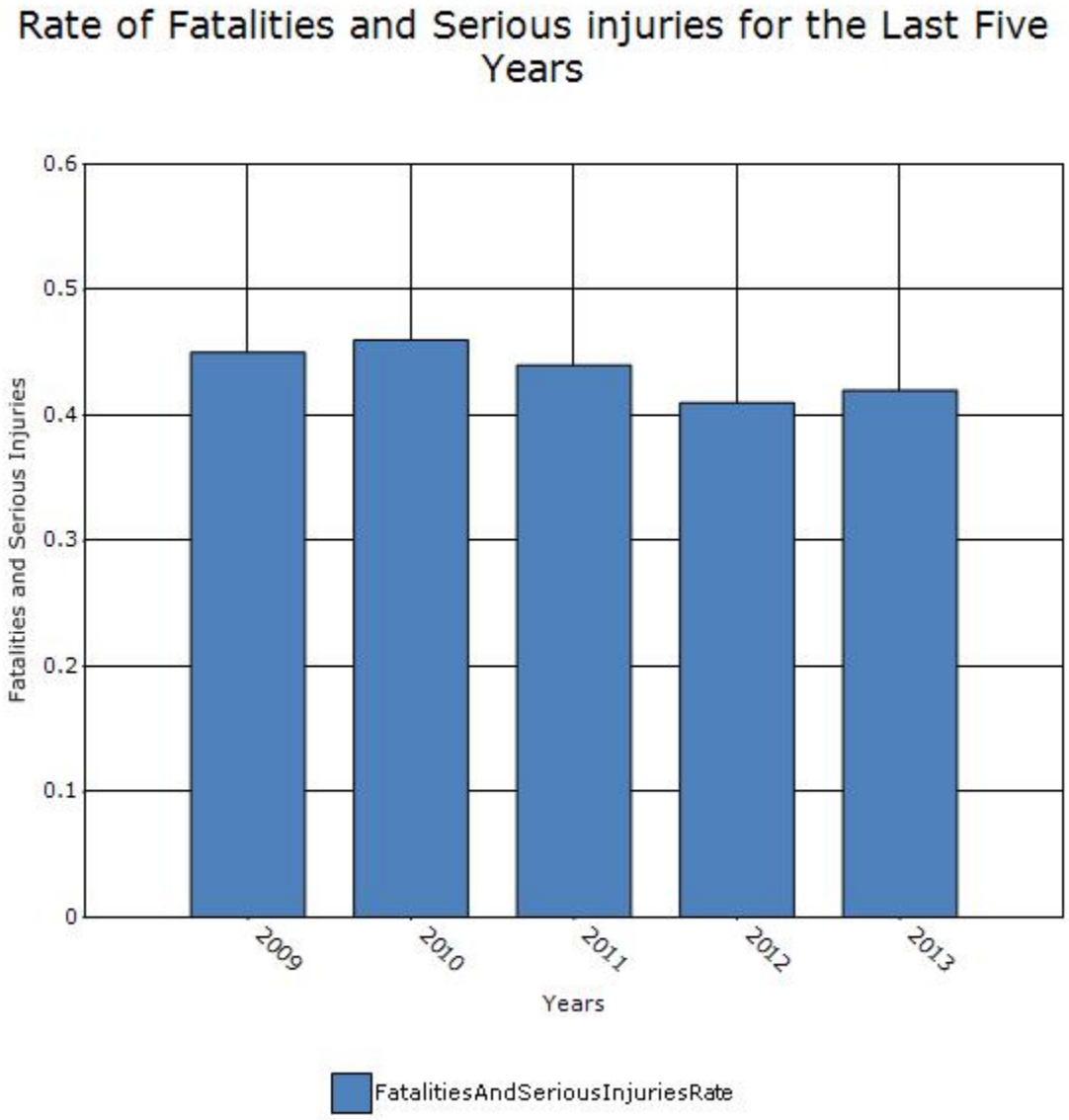
Sample calculation methodology is provided below for fatality and serious injury rates (per capita). Similar calculations were used for individual fatality and serious injury rates. The number of fatalities reported are according to NHTSA's Fatality Analysis Reporting System (FARS) and the number of serious injuries reported are according to Delaware's Crash Analysis Reporting System (CARS). At the time of reporting, 2014 data has not been published by FARS. As such, 2014 values are omitted.

2009 Rate: [(# 2009 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2009 Population Figure*) + (# 2008 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2008 Population Figure*) + (# 2007 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2007 Population Figure*) + (# 2006 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2006 Population Figure*)]/4

Please note that FHWA's Online Reporting Tool (ORT) automatically calculates the 5-year rolling average based upon yearly inputs; however, 2005 data for serious injuries is not currently available in Delaware's crash database. As such, the reported 5-year rolling average for 2009 (fatality and serious injury rate) is inaccurately being reported as 0.36 compared to the correct value of 0.43.

2010 Rate (similar calculations used for 2011, 2012, and 2013 rates): [(# 2010 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2010 Population Figure*) + (# 2009 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2009 Population Figure*) + (# 2008 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2008 Population Figure*) + (# 2007 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2007 Population Figure*) + (# 2006 Fatalities and Serious Injuries of Drivers and Pedestrians 65 years of age and older/2006 Population Figure*)]/5

* Number of People 65 Years of Age and Older (per 1,000 Total Population) per Attachment 2 from FHWA's Older Drivers and Pedestrians Special Rule Interim Guidance (2/13/13) accessed August 2015.



Please note that FHWA's Online Reporting Tool (ORT) automatically calculates the 5-year rolling average based upon yearly inputs; however, 2005 data for older drivers and pedestrian serious injuries is not currently available in Delaware's crash database. As such, the reported 5-year rolling averages for 2009 were manually edited to reflect a 4-year rolling average. If needed, please see attached spreadsheet for the crash data.

Does the older driver special rule apply to your state?

No

Assessment of the Effectiveness of the Improvements (Program Evaluation)

What indicators of success can you use to demonstrate effectiveness and success in the Highway Safety Improvement Program?

☐ None

☐ Benefit/cost

☐ Policy change

☒ Other: Other-Fatality and serious injury rates have declined between 2010 and 2013, increasing less than 2 percent in 2014 as compared to 2013

What significant programmatic changes have occurred since the last reporting period?

☐ Shift Focus to Fatalities and Serious Injuries

☐ Include Local Roads in Highway Safety Improvement Program

☐ Organizational Changes

☐ None

☒ Other: Other-Systemic programs were implemented

Briefly describe significant program changes that have occurred since the last reporting period.

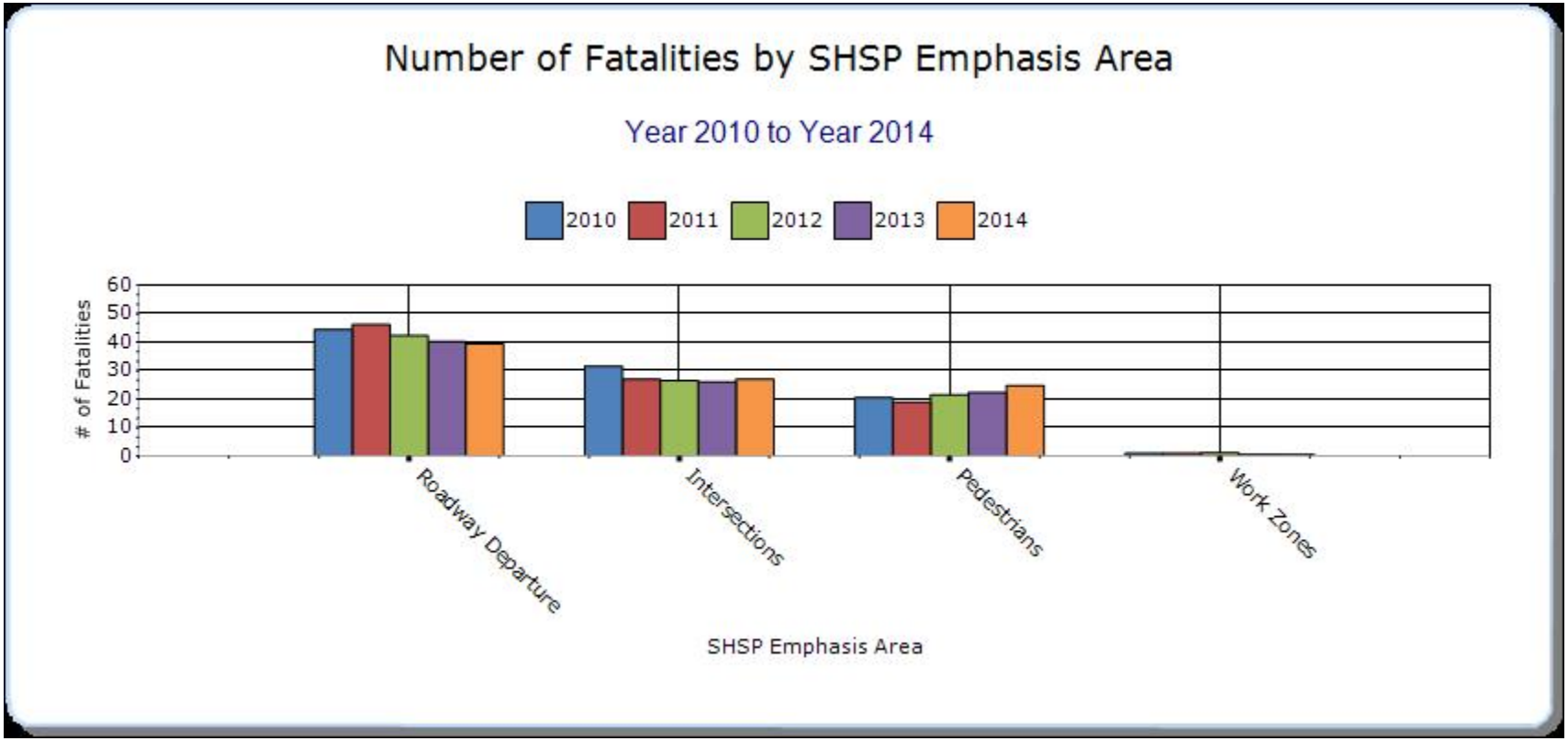
During the FY 2015 reporting period, DelDOT continued efforts to develop and implement systemic-based programs to supplement its other HSIP programs.

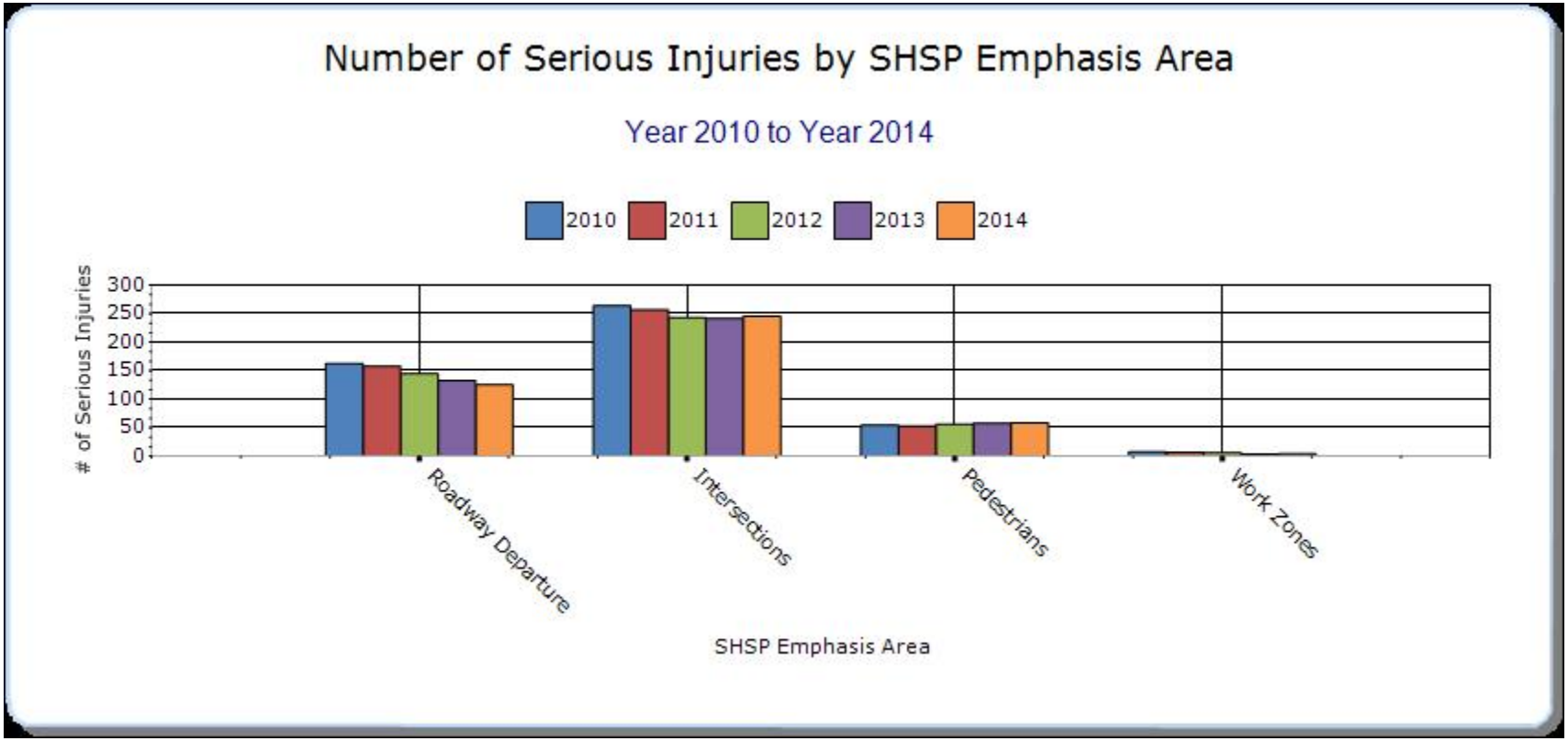
SHSP Emphasis Areas

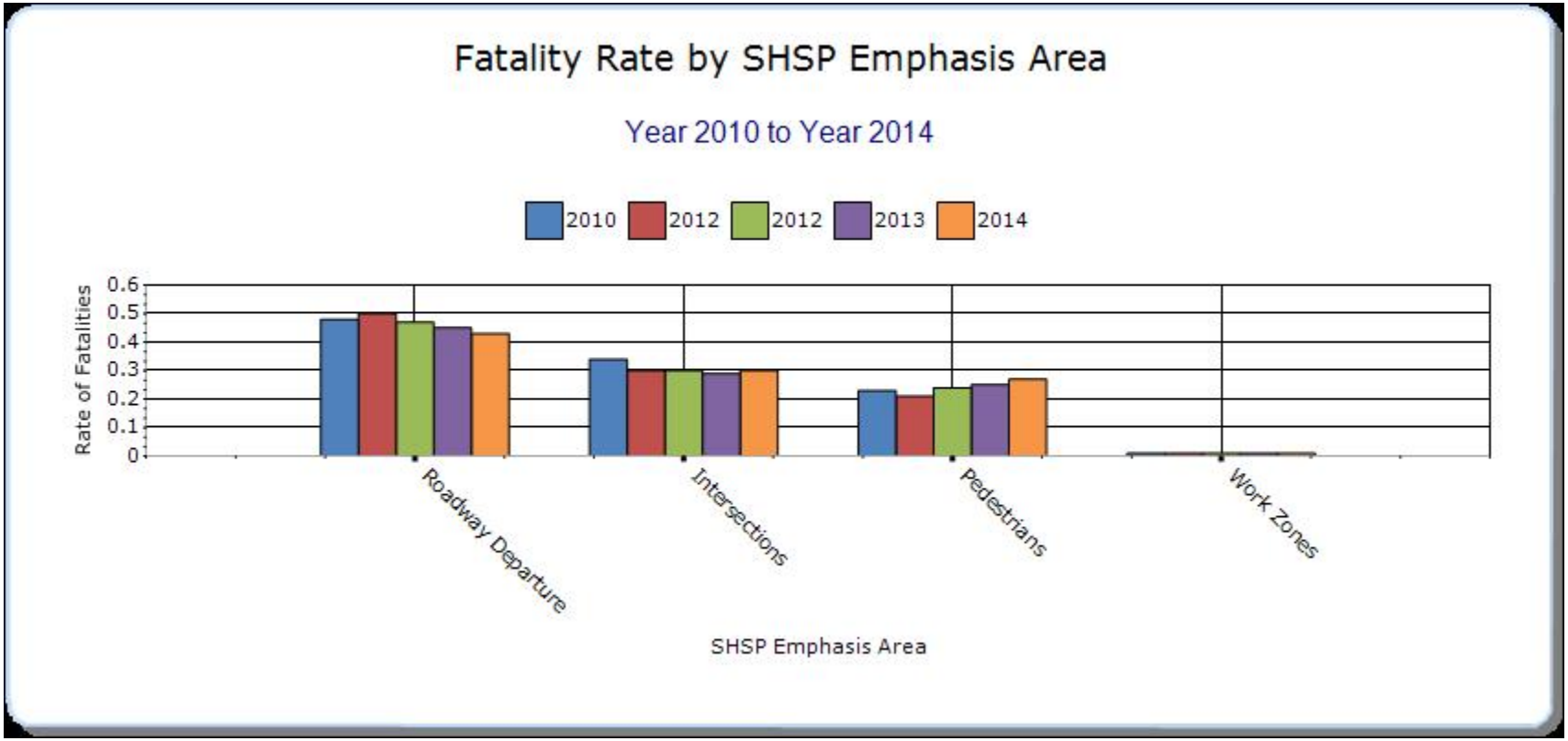
For each SHSP emphasis area that relates to the HSIP, present trends in emphasis area performance measures.

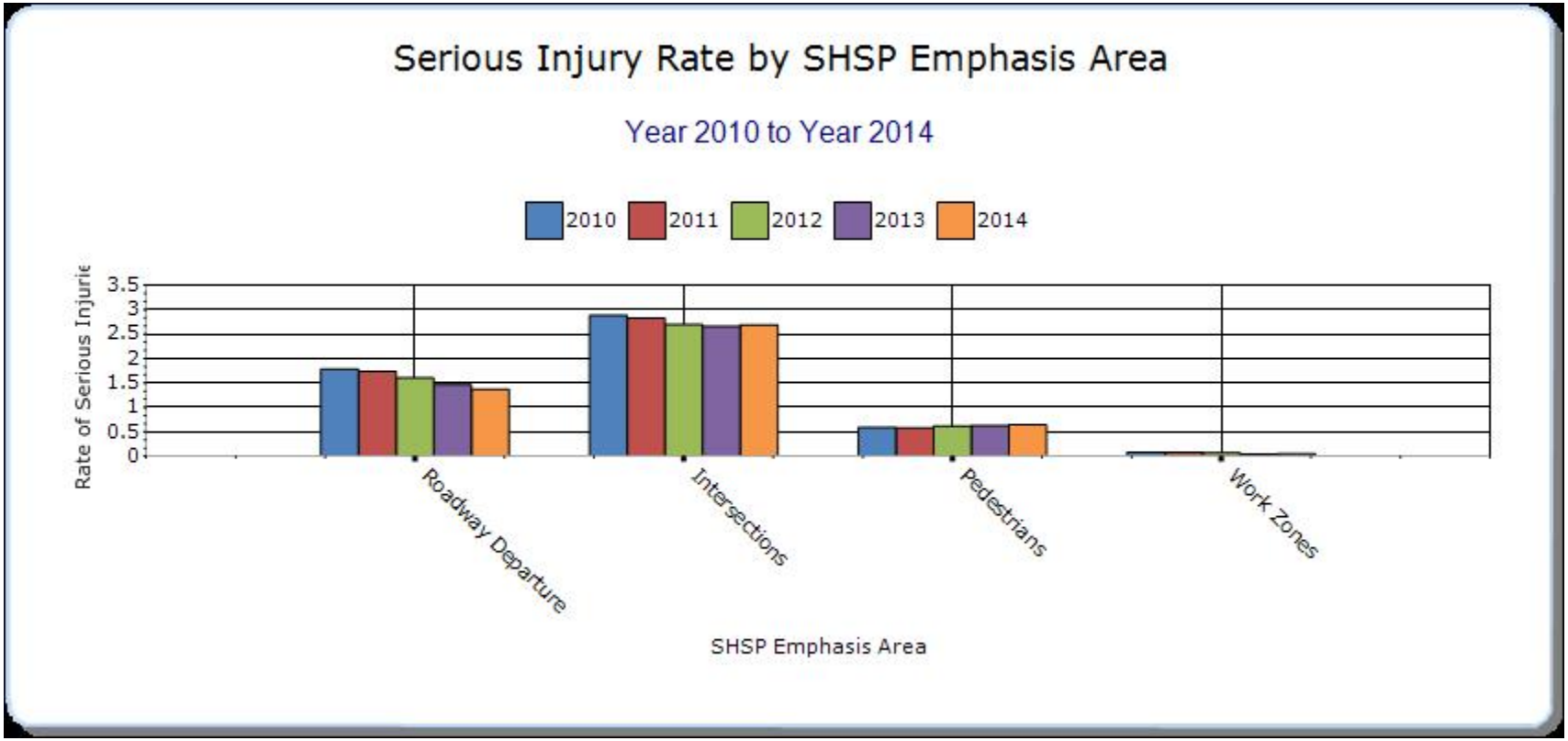
Year - 2014

HSIP-related SHSP Emphasis Areas	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
Roadway Departure		39.4	125.4	0.43	1.37	0	0	0
Intersections		27	245.4	0.3	2.69	0	0	0
Pedestrians		24.8	58.4	0.27	0.64	0	0	0
Work Zones		0.6	4.4	0.01	0.05	0	0	0


Number of Fatalities by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
60
50
40
30
20
10
0
Roadway Departure
Intersections
Pedestrians
Work Zones
SHSP Emphasis Area


Number of Serious Injuries by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
300
250
200
150
100
50
0
Roadway Departure
Intersections
Pedestrians
Work Zones
SHSP Emphasis Area


Fatality Rate by SHSP Emphasis Area
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.6
0.5
0.4
0.3
0.2
0.1
0
Roadway Departure
Intersections
Pedestrians
Work Zones
SHSP Emphasis Area



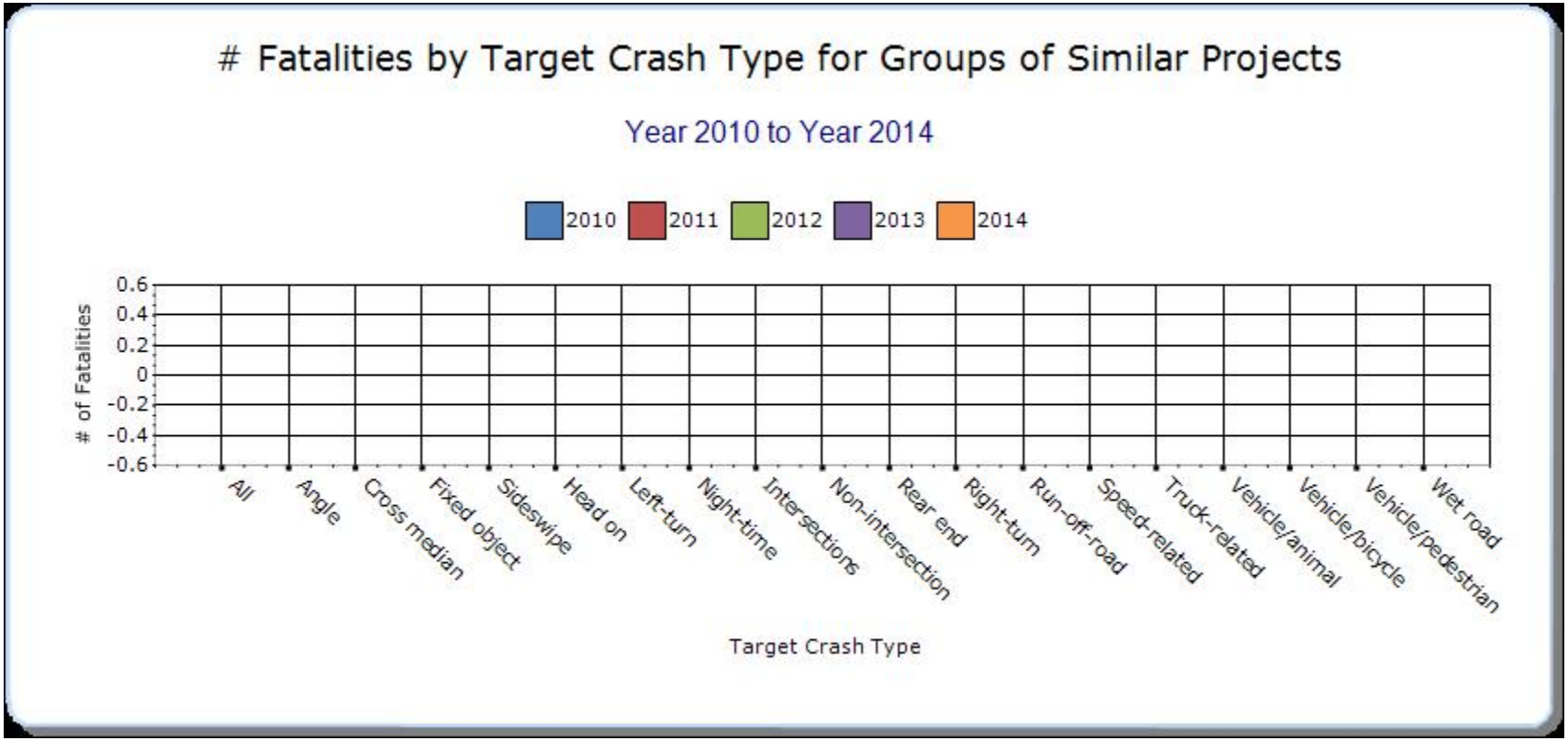
At the time of reporting, annual vehicle miles traveled data is unavailable for calendar year 2014. As such, 2014 crash rates were calculated based on 2013 VMT values.

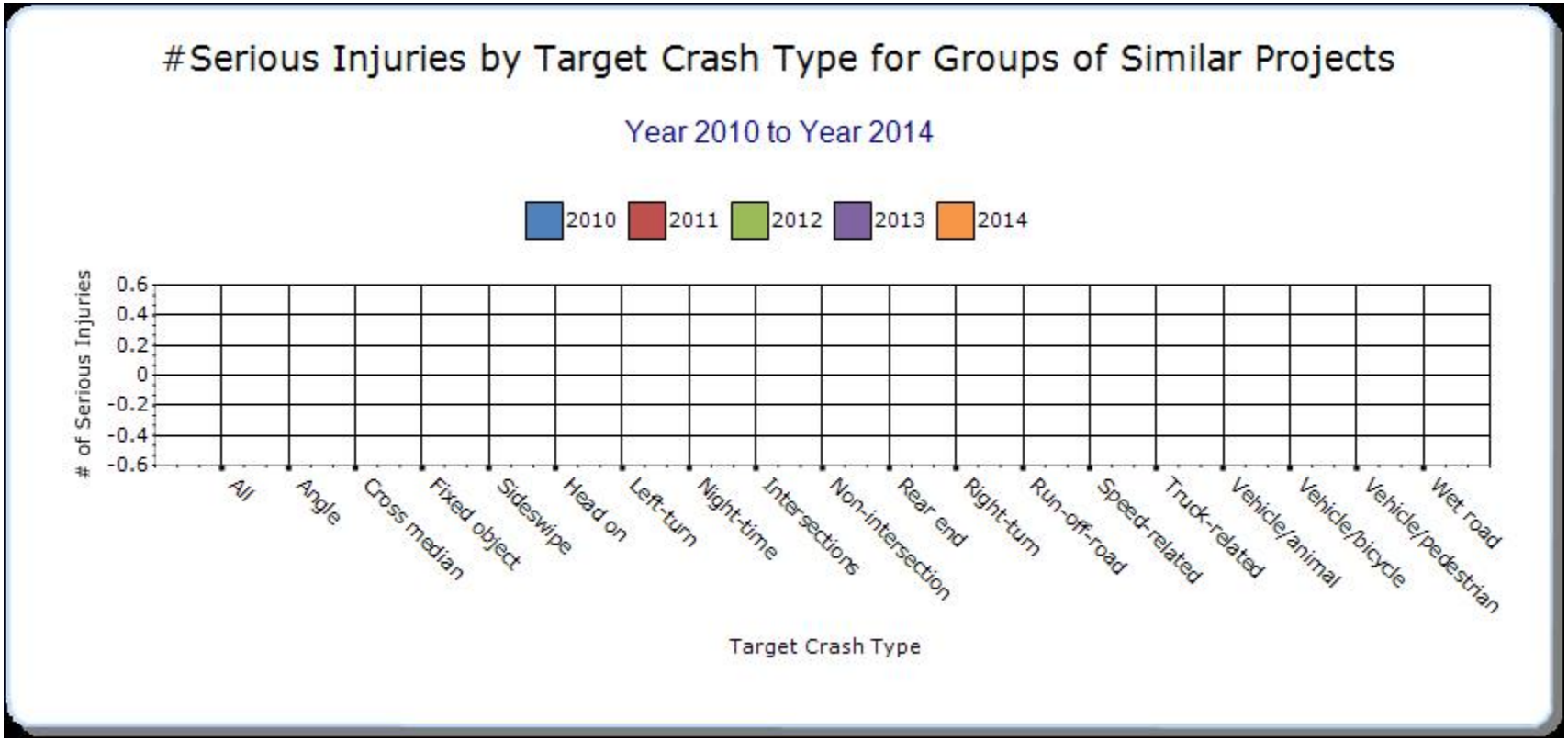
Groups of similar project types

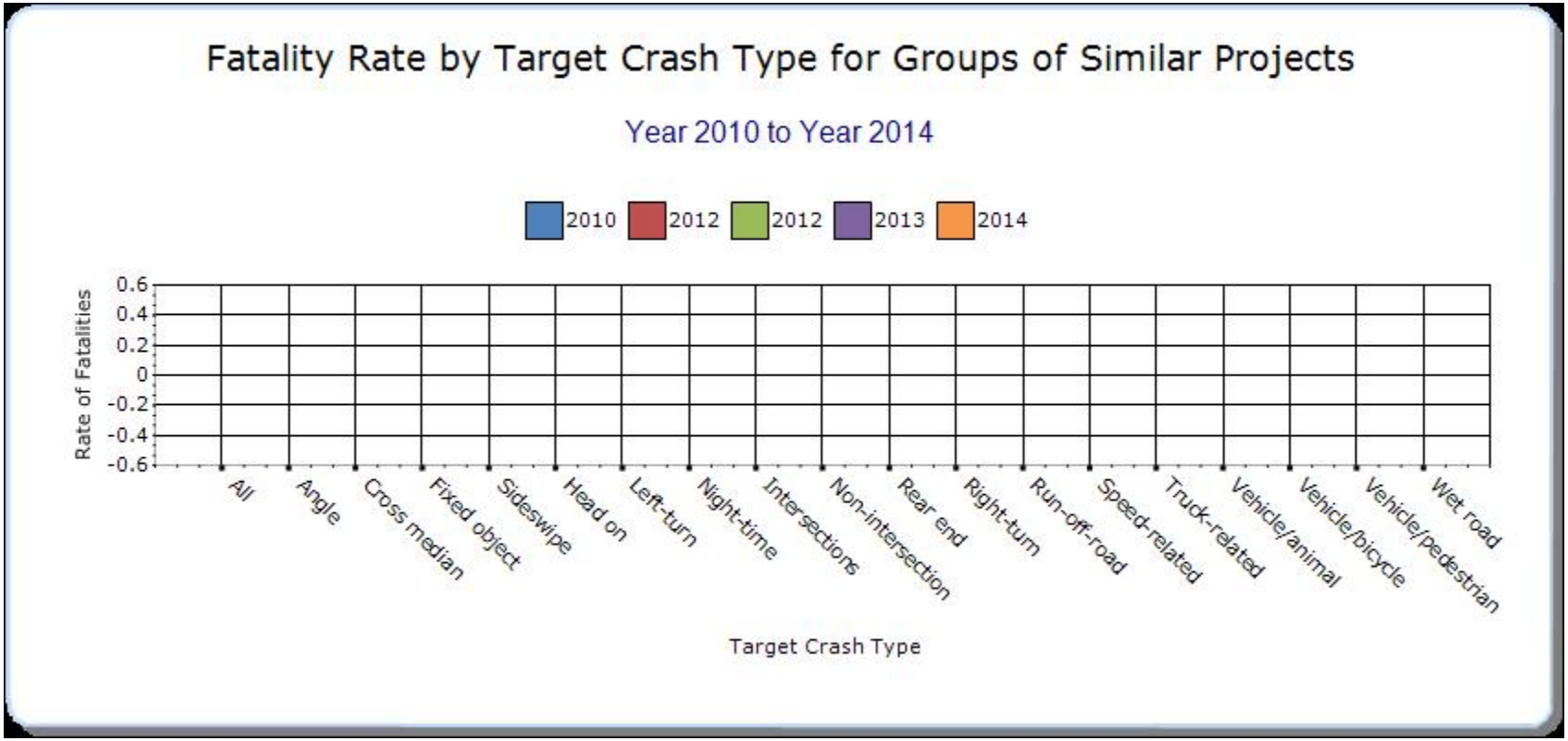
Present the overall effectiveness of groups of similar types of projects.

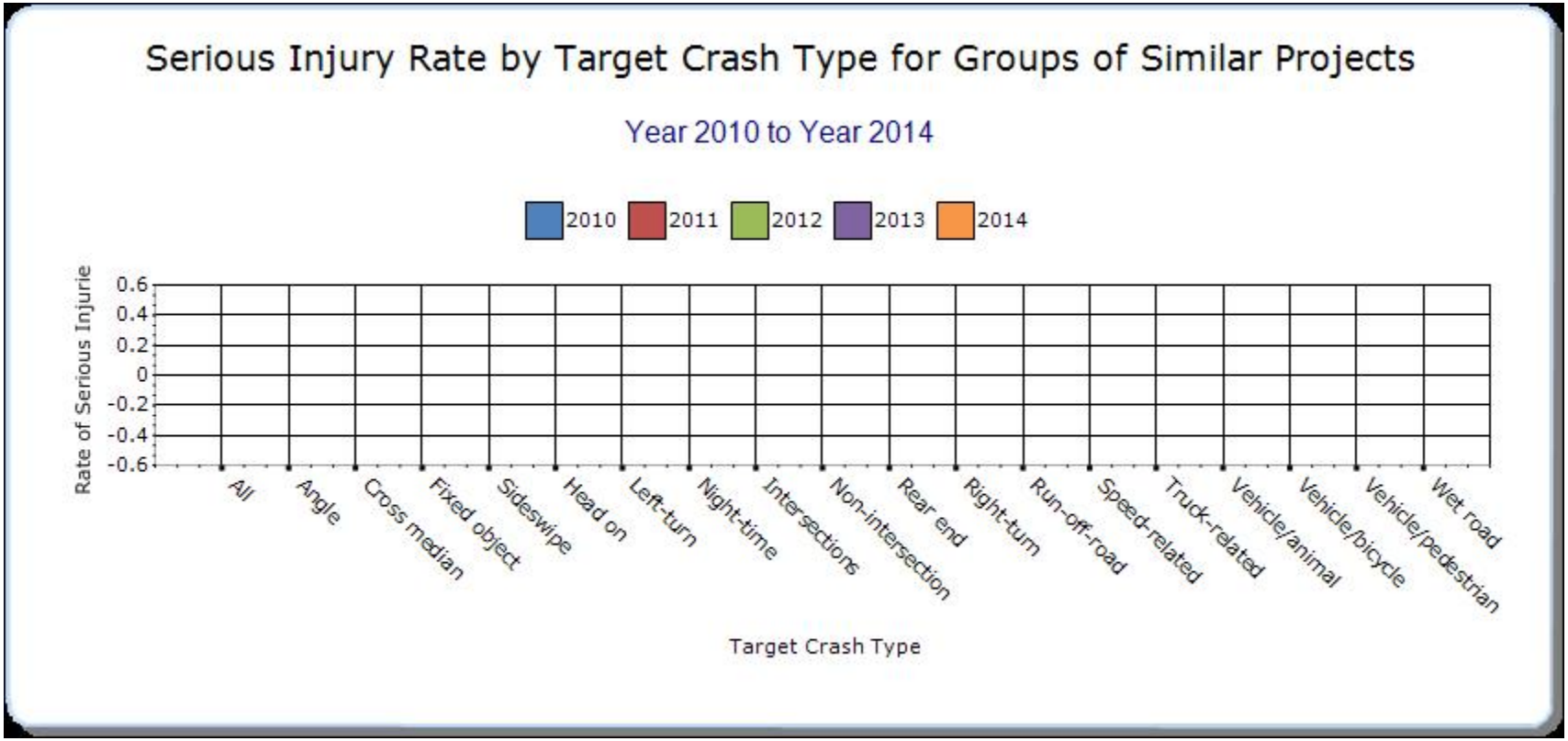
Year - 2014

HSIP Sub-program Types	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
See Optional Description		0	0	0	0	0	0	0


Fatalities by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


#Serious Injuries by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Fatality Rate by Target Crash Type for Groups of Similar Projects
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type



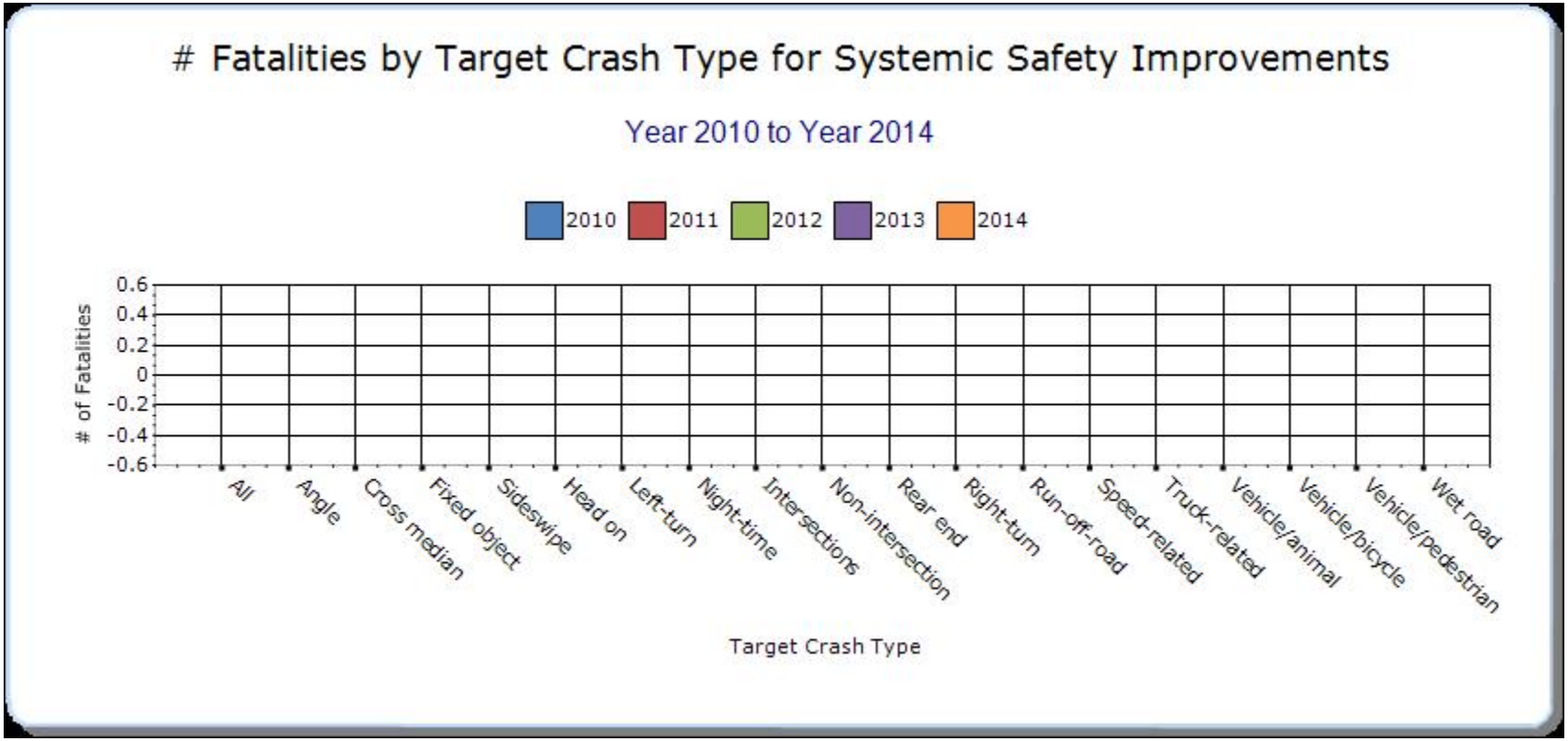
Refer to Question #24 for general safety performance measures for the segment (i.e., Hazard Elimination Program) subprogram. Refer to question #32 for performance measures for Pedestrian Safety. The freeway median barrier, longitudinal rumble strip, high friction surface treatment, and horizontal curve programs are all intended to reduce roadway departure crashes. Refer to question #32 for performance measures for roadway departure crashes.

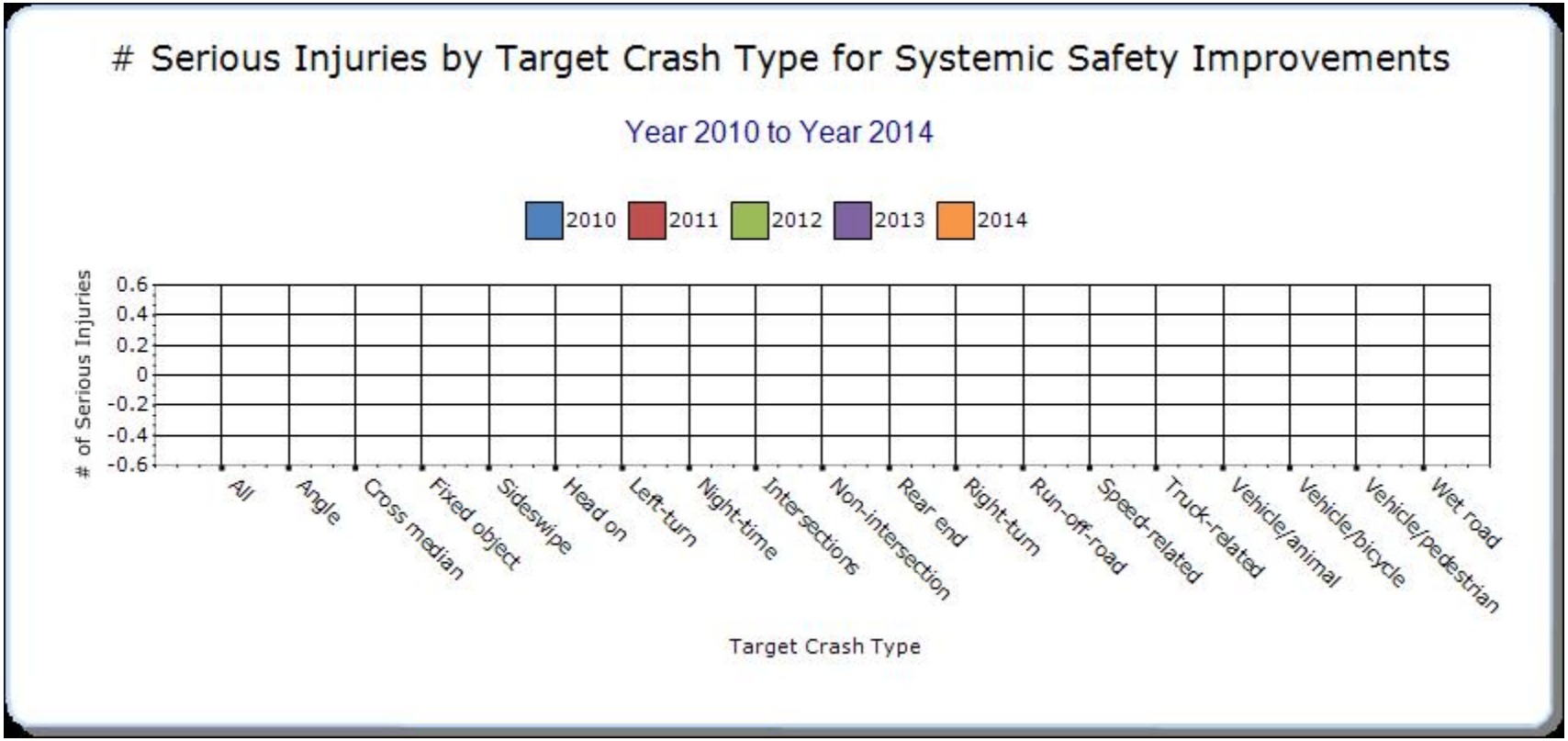
Systemic Treatments

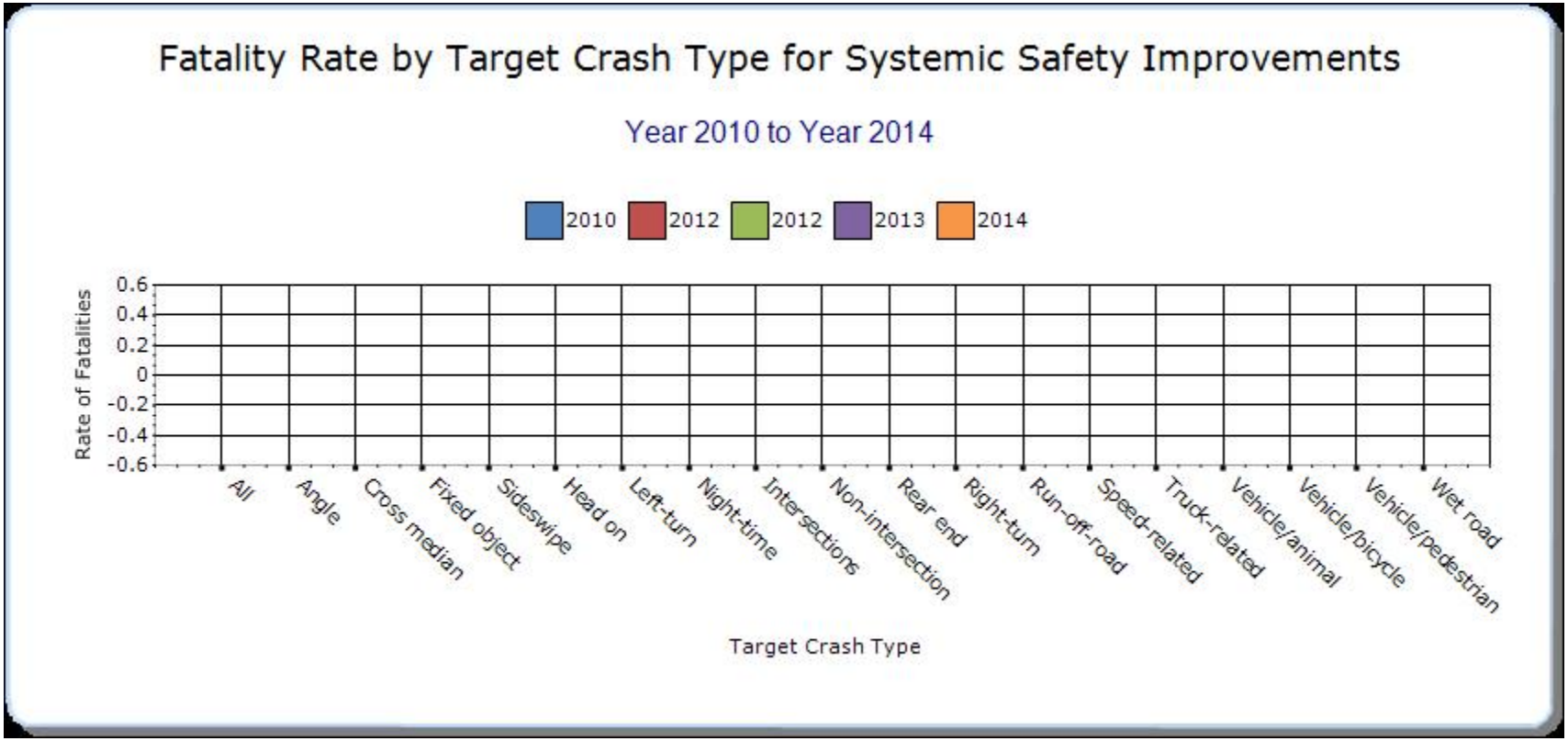
Present the overall effectiveness of systemic treatments.

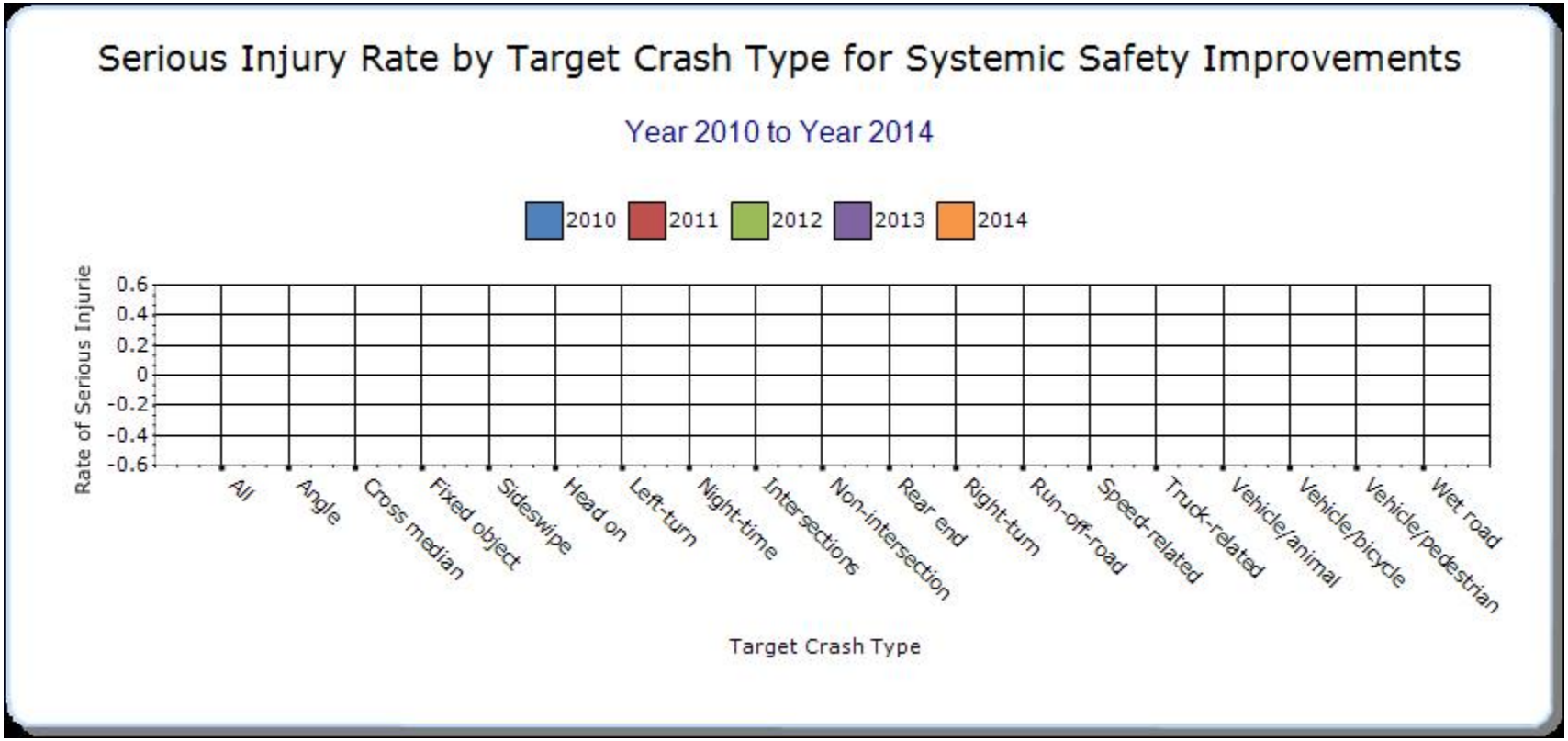
Year - 2014

Systemic improvement	Target Crash Type	Number of fatalities	Number of serious injuries	Fatality rate (per HMVMT)	Serious injury rate (per HMVMT)	Other-1	Other-2	Other-3
See Optional Description		0	0	0	0	0	0	0


Fatalities by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Serious Injuries by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2011
2012
2013
2014
# of Serious Injuries
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type


Fatality Rate by Target Crash Type for Systemic Safety Improvements
Year 2010 to Year 2014
2010
2012
2012
2013
2014
Rate of Fatalities
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
All
Angle
Cross median
Fixed object
Sideswipe
Head on
Left-turn
Night-time
Intersections
Non-intersection
Rear end
Right-turn
Run-off-road
Speed-related
Truck-related
Vehicle/animal
Vehicle/bicycle
Vehicle/pedestrian
Wet road
Target Crash Type



The median barrier, longitudinal rumble strip, and horizontal curve programs are all intended to reduce roadway departure crashes. Refer to question #32 for performance measures for roadway departure crashes.

Describe any other aspects of the overall Highway Safety Improvement Program effectiveness on which you would like to elaborate.

No elaboration at this time.

Project Evaluation

Provide project evaluation data for completed projects (optional).

Location	Functional Class	Improvement Category	Improvement Type	Bef-Fatal	Bef-Serious Injury	Bef-All Injuries	Bef-PDO	Bef-Total	Aft-Fatal	Aft-Serious Injury	Aft-All Injuries	Aft-PDO	Aft-Total	Evaluation Results (Benefit/ Cost Ratio)
No Elaboration at this time														

Optional Attachments

Sections	Files Attached
Program Structure: Program Methodology	2015 HSIP Annual Report HEP Site Selection.pdf
Progress in Implementing Projects: General Listing of Projects	HSIP_Q23 DE (2015).xlsx
Progress in Achieving Safety Performance Targets: Overview of General Safety Trends	HSIP_Q25 DE (2015).xlsx
Progress in Achieving Safety Performance Targets: Overview of General Safety Trends	HSIP_Q24 DE (2015).xlsx
Progress in Achieving Safety Performance Targets: Application of Special Rules	HSIP_Q27 DE (2015).xlsx

Glossary

5 year rolling average means the average of five individual, consecutive annual points of data (e.g. annual fatality rate).

Emphasis area means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

Highway safety improvement project means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT means hundred million vehicle miles traveled.

Non-infrastructure projects are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

Older driver special rule applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

Performance measure means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

Programmed funds mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

Roadway Functional Classification means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

Strategic Highway Safety Plan (SHSP) means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Systemic safety improvement means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

Transfer means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.